

***Brachyconidiella monilispora*, a rare fungus newly recorded from South America**

DIONEIS RODRIGUES CARDOSO DA SILVA¹,
MARCOS FABIO OLIVEIRA MARQUES^{1†}, NADJA SANTOS VITORIA¹,
LUIS FERNANDO PASCHOLATI GUSMÃO^{2*}

¹ Universidade do Estado da Bahia, Programa de Pós-graduação em Biodiversidade Vegetal,
Rua do Gangorra, 503, CHESF, 48608-240 - Paulo Afonso, Brazil

² Universidade Estadual de Feira de Santana, Programa de Pós-graduação em Botânica,
Avenida Transnordestina, s/n, Novo Horizonte, 44036-900, Feira de Santana, Brazil

* CORRESPONDENCE TO: lgusmao@uefs.br

ABSTRACT—*Brachyconidiella monilispora* was collected during an inventory of conidial fungi associated with decaying leaves of *Hancornia speciosa* in sandbank areas in Bahia state, Brazil. This rare fungus, previously recorded only from Cuba and Florida (U.S.A.), is a new record for South America. The Brazilian material is described and illustrated.

KEY WORDS—asexual fungi, hyphomycete, tropical fungi, taxonomy

Introduction

Brachyconidiella is a monotypic genus for a type species *B. monilispora* described from decaying leaves of *Coccoloba uvifera* L. (*Polygonaceae*) in Cabo de San Antonio, Pinar del Río, Cuba (Castañeda-Ruiz & Kendrick 1990). The species was recollected twice in Cuba (1995, 1996) from unidentified rotten leaves and isolated in pure culture (MUCL39848, MUCL39860). Subsequently, the species was found in Key Largo, Florida, U.S.A., from dead leaves and stems of an unidentified plant (Delgado 2009). *Brachyconidiella monilispora* is morphologically similar to species in another monotypic genus, *Brachyconidiellopsis fimicola* Decock & al. (Decock & al. 2004). Both species

[†] In memoriam

have cheiросporous, penicilliform, repeatedly branched, moniliform conidia that develop from holoblastic conidiogenous cells and are associated with sporodochial or synnematal conidiomata (Castañeda-Ruiz & Kendrick 1990, Decock & al. 2004, Seifert & al. 2011). However, the genera differ in their conidiogenous cell features and conidial secession: *Brachyconidiellopsis* has monoblastic (or commonly polyblastic) conidiogenous cells and rhexolytic conidial secession whereas *Brachyconidiella* has monoblastic conidiogenous cells and schizolytic conidial secession. Moreover, these two genera have different habits, *Brachyconidiellopsis* in herbivore feces (coprophilous?) and *Brachyconidiella* in decomposing plant litter. Phylogenetic analyses place *Brachyconidiella* as incertae sedis within *Dothideomycetes*, and *Brachyconidiellopsis* within *Microascaceae*, *Microascales*, *Sordariomycetes* (Decock & al. 2004, Seifert & al. 2011).

Materials & method

Samples of decaying leaves of *Hancornia speciosa* occurring in sandbank areas were collected during expeditions to the Conde, Bahia, Brazil. The samples were placed in paper bags and sent to the laboratory to undergo washing processes (Castañeda-Ruiz & al. 2016). Thereafter, the samples were observed under stereomicroscope, and the microscopic reproductive structures were transferred to slides containing PVL resin (polyvinyl alcohol, lactic acid and phenol). The specimens analyzed were deposited in the Herbarium of Universidade Estadual de Feira de Santana, Bahia, Brazil (HUEFS).

Taxonomy

Brachyconidiella monilispora R.F. Castañeda & W.B. Kendr.,
Univ. Waterloo Biol. Ser. 33: 14, 1990.

FIG. 1

Mycelium mostly immersed in the substrate, composed of septate, branched smooth walled, brown hyphae, 1–2 µm. Conidiomata synnematal, scattered, erect, straight or somewhat flexuous, brown at the base to pale brown towards apex, 26–55 × 6–10 µm, head 35–53 µm diam. No sporodochial conidiomata were observed. CONIDIOPHORES unbranched or rarely branched, 1–3-septate, smooth, brown to pale brown at apex, 2–2.5 µm wide. CONIDIOGENOUS CELLS monoblastic or polyblastic, terminal, integrated, barrel-shaped, pale brown, 4–6 × 1.5–2 µm. Conidial secession schizolytic. CONIDIA 15–19 × 14–27 µm, cheiросporous, penicilliform, moniliform, branched (7–13) with chains composed of 3–8 cells and 12.5–16 µm long; lower cells of branches more or less spherical, 2 µm wide, basal cells truncated, somewhat trapezoid, 3 µm wide, subhyaline.

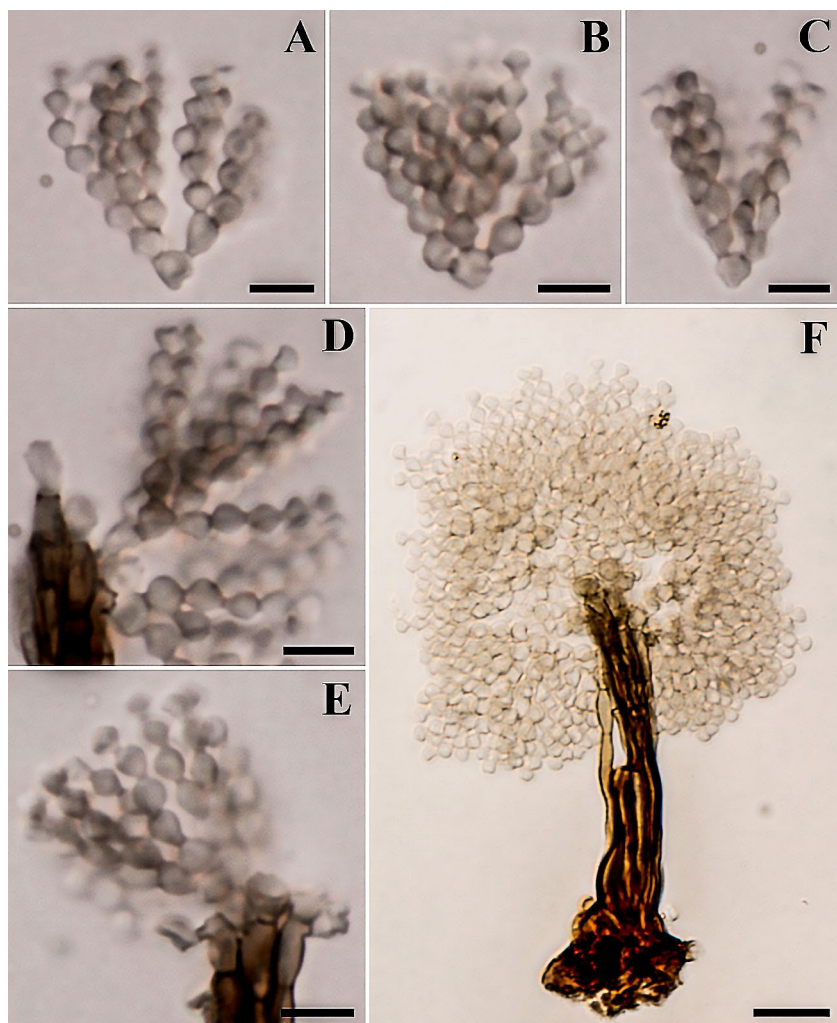


FIG. 1. *Brachyconidiella monilispora* (HUEFS 237347).

A–C. Conidia; D, E. Detail of conidiogenous cells; F. General aspect of conidioma.

Scale bars: A–E = 5 μ m; F = 10 μ m.

SPECIMEN EXAMINED: BRAZIL, BAHIA STATE, Conde, Sítio do Conde, 11°25'S 37°36'W, on dead leaves of *Hancornia speciosa* Gomes (*Apocynaceae*), 10 August 2017, coll. D.R.C. Silva (HUEFS 237347).

NOTE: The features of the Brazilian specimen are in accord with the earlier descriptions, except for the smaller conidiomata (Cuban specimens 70–120 $\times$

11–18 µm; Floridian specimen <190 × 11–44 µm) and the presence of some polyblastic conidiogenous cells. The Brazilian and Floridian specimens both lacked sporodochial conidiomata; and the Brazilian and Cuban specimens both produced branched conidiophores. This is the first record of *B. monilispora* from South America. Unfortunately, the fungus does not develop in pure culture.

In addition to *Brachyconidiellopsis*, two other genera have similar conidiation to *Brachyconidiella monilispora*. *Matsushimaea* Subram. (particularly *M. fasciculata* Subram.) also has monoblastic conidiogenous cells and cheirosporous, repeatedly branched, moniliform conidia with schizolytic secession but differs by its brown conidia and the absence of conidiophores (Subramanian 1978, Seifert & al. 2011). According to Decock & al. (2004), some asexual species of *Seuratia* Pat. (particularly *S. millardetii* (Racib.) Meeker) have similar branched conidia composed of moniloid chains of spheroid cells but differ by their sporochial conidiomata (Meeker 1975). No sequences were available for *Matsushimaea* and *Seuratia* for phylogenetical comparison with *B. monilispora*.

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Literature cited

- Castañeda-Ruiz RF, Kendrick, WB. 1990. Conidial fungi from Cuba: II. University of Waterloo Biology Series 33: 11–15.
- Castañeda-Ruiz RF, Heredia G, Gusmão LFP, Li DW. 2016. Fungal diversity of Central and South America. 197–217 in: DW Li (ed.). *Biology of Microfungi*, Springer International Publishing. https://doi.org/10.1007/978-3-319-29137-6_9
- Decock C, Castañeda-Ruiz RF, Adhikari MK. 2004. Taxonomy and phylogeny of *Brachyconidiellopsis fimicola*, gen. et sp. nov., a sporodochial to synnematos coprophilous fungi [sic] related to the *Microascales* (*Ascomycetes*) from Nepal. *Cryptogamie Mycologie* 25: 137–147.
- Delgado G. 2009. South Florida microfungi: *Veramycella bispora*, a new palmicolous anamorphic genus and species, with some new records for the continental USA. *Mycotaxon* 107: 357–373. <https://doi.org/10.5248/107.357>
- Meeker JA. 1975. Revision of *Seuratiaceae*. I. Morphology of *Seuratia*. *Canadian Journal of Botany* 53: 2462–2482. <https://doi.org/10.1139/b75-273>
- Seifert K, Morgan-Jones G, Gams W, Kendrick B. 2011. The genera of hyphomycetes. CBS Biodiversity Series 9. 997 p.
- Subramanian CV. 1978 [“1977”]. Revision of Hyphomycetes – I. *Kavaka* 5: 93–98